



# Trout Production Methodology and Quality Measures

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**Scope and Purpose:** A Trout Production Survey is conducted annually, which includes all states with known trout operations. Data are collected on annual production, value of sales, value of distributed fish, and point of first sale and losses.

Data collected on annual production, value of sales, value of distributed fish, and point of first sale and losses are published for 16 states. The publication contains estimates for nine other states, which are combined into an “Other States” category. After each Census of Agriculture, which is an exhaustive data collection effort for all known agricultural operations across the United States, the list of published states is evaluated and modified to include the largest trout producing states.

**Survey Timeline:** Data are collected for the previous year’s production beginning in January. States complete data collection, analysis, summarization, and submission of estimates over approximately a six-week period ending in early February. The following week, a national review is completed and national estimates are established. Estimates are released to the public at 3:00 p.m. ET in late February on the date designated by the Agricultural Statistics Board on its annual publications calendar.

**Sampling:** The target population for the Trout Production Survey is all trout farming operations that sell fish or have the potential to sell fish in the selected states. A state is included for the Trout Production Survey if it produces at least 1% of the total production for the United States. All records on the National Agricultural Statistics Service (NASS) List Frame with positively reported trout data from a past survey are sampled. The List Frame is a current and unduplicated list of agricultural operations, and all current trout operations are assumed to be on the list. If a new trout operation is found at any time, the operation is added to the List Frame. All trout operations are sampled and have a weight equal to one. Each respondent operation accounts only for itself. The NASS Area Frame, which is a sampling frame of all land area, is not constructed nor sampled to identify trout operations, so there is no area frame component to the annual Trout Production Survey.

**Data Collection:** Regional Field Office (RFO) statisticians are responsible for coordinating their own data collection strategy for their respective state. Data are collected by mail, telephone, Computer Assisted Web Interviewing (CAWI), and Mobile Computer Assisted Personal Interviewing (mCAPI). Respondents are mailed a letter and a questionnaire for the respondent to complete and return by mail or use a survey code to complete the survey securely online. If response is not received by mail or the Internet, respondents are contacted by phone for the survey data.

**Survey Edit:** As survey data are collected and captured, data are edited for consistency and reasonableness using automated systems. Reported data are edited as a batch of data when first captured. The edit logic ensures administrative coding follows the methodological rules associated with the survey design. Relationships between data items (i.e. responses to individual questions) on the current survey are verified. Some data items in the current survey are compared to data items from earlier surveys to ensure certain relationships are logical. The edit will determine the status of each record to be either “dirty” or “clean” (i.e. failing or passing the edit requirements for consistency and reasonableness). Records that fail edit requirements must be updated or certified by an analyst to be exempt from the failed edit requirement. Only records that pass edit requirements are eligible for final summary.

**Analysis Tools:** Edited trout data are processed through an interactive analysis tool which displays data for all reports by item. The tool provides scatter plots, tables, charts, and special tabulations that allow the analyst to compare an individual record to similar records. Atypical responses and unusual data relationships become evident and RFO staff review them to

determine if they are correct. The tool allows comparison to an agricultural operation's previously reported data to detect large changes in the operation. Data found to be in error are corrected, while accepted data are retained.

**Nonsampling Errors:** Nonsampling errors are present in any survey process. These errors include reporting, recording, and editing errors. Steps are taken to minimize these errors, such as comprehensive interviewer training, validation, and verification of processing systems, application of detailed computer edits, and evaluation of the data via the analysis tools.

**Estimators:** The Trout Production Survey is a complete enumeration of all known trout operations in the selected states. Trout operations are selected from the list of all agricultural operations, and new operations are added into the sample when discovered. No coverage adjustment is made.

Response to the Trout Production Survey is voluntary. Some producers refuse to participate in the survey. Others cannot be located during the data collection period and some submit incomplete reports. These nonrespondents must be accounted for if accurate estimates of trout are to be made. For the Trout Production Survey, nonrespondents are accounted for by adjusting the weights of the respondents. Since the entire population is sampled for the Trout Production Survey, all operations have a sample weight of one. The adjustment occurs by stratum as the bounded strata represent homogeneous groupings of similar sized farms. The largest stratum is unbounded and is made up of large and, often unique, farms. Nonrespondents in this stratum must be manually imputed by Estimation Center statisticians and their weights are not adjusted. The adjustment is performed by individual item on the questionnaire (total water area, inventory, sales) so adjustments for item nonresponse (partial reports) and unit nonresponse (refusals and inaccessible) are done in a single calculation.

Two estimators are used to compute direct measures of the trout sales and distributed items. The "reweighted" estimator and the "adjusted" estimator are computationally identical except in how the nonresponse adjustments are made. The reweighted estimator uses a global weight adjustment across all usable reports. The nonresponse weight adjustment for the adjusted estimator uses an additional piece of information. When a sampled farm refuses to cooperate, interviewers will probe to determine whether an operation sold or distributed trout even though the number is not known. This presence/absence indicator is used in the weight adjustment.

Point estimates, called direct expansions, for both estimators are calculated by multiplying the reported value by the nonresponse-adjusted weight and summing to strata totals which are subsequently summed to obtain the state total.

**Estimation:** When all samples are accounted for, all responses fully edited and the analysis material is reviewed, each state executes a summary to evaluate and analyze the data for which it is accountable. Since all states conduct identical surveys, the samples can be pooled and national survey results computed. The summary results provide multiple point estimates and information used to evaluate the quality of the survey estimates, such as response rates.

States are responsible for performing a detailed review of their survey results. Any irregularities revealed by the summary must be investigated and, if necessary, resolved. Using the historical relationship of the survey estimates to the official estimate, states must interpret the survey results and submit a recommended estimate to NASS headquarters in Washington, DC for all data series in the program. The data are viewed in tabular and graphical form and a consensus estimate established.

For the national estimates, NASS assembles a panel of statisticians to serve on the Agricultural Statistics Board (ASB). The ASB reviews the national results and establishes the national estimates. The same estimators used in the state summaries are produced by the national summary. The ASB follows the same approach the states do to determine state estimates when determining the national estimates. In addition, the ASB examines results across all states and compares the state level recommendations. NASS determines state estimates first and these estimates are summarized to the national level. Survey based indicators can be impacted by influential outliers, individual reports that have excessive influence on the estimates and are extremely unusual data for a given operation. NASS thoroughly reviews the survey data to identify these situations and consider their impact on the survey results when establishing the official estimates.

## Quality Metrics for Trout

**Purpose and Definitions:** Under the guidance of the Statistical Policy Office of the Office of Management and Budget (OMB), the United States Department of Agriculture’s National Agricultural Statistics Service (NASS) provides data users with quality metrics for its published data series. The metrics tables below describe the performance data for all surveys contributing to the publication. The accuracy of data products may be evaluated through sampling and non-sampling error. The measurement of error due to sampling in the current period is irrelevant for a fully enumerated data series. Non-sampling error is evaluated by response rates and the weighted item response rate.

**Sample size** is the number of observations selected from the population to represent a characteristic of the population. Operations that did not have the item of interest or were out of business at the time of data collection have been excluded.

**Response rate** is the proportion of the above sample that completed the survey.

**Weighted item response rate** is a ratio of reported survey data expanded by the original sampling weight compared to final nonresponse adjusted summary totals.

**Trout Production Survey Sample Size and Response Rates:** To assist in evaluating the performance of the estimates in the trout report, the sample size and response rates are displayed. Response rates overall for 2020 and 2021 are displayed.

### Trout Survey Sample Size and Response Rates – United States: 2020-2021

	2020		2021	
	Sample size	Response rate	Sample size	Response rate
	(number)	(percent)	(number)	(percent)
Arkansas .....	5	80.0	5	100.0
California .....	26	96.2	25	60.0
Colorado .....	34	82.4	33	72.7
Georgia .....	13	69.2	10	70.0
Idaho .....	19	84.2	20	85.0
Michigan .....	19	52.6	22	59.1
Missouri .....	12	91.7	12	91.7
New York .....	22	81.8	21	66.7
North Carolina .....	35	85.7	30	80.0
Oregon .....	11	81.8	10	60.0
Pennsylvania .....	32	59.4	43	27.9
Utah .....	21	85.7	19	94.7
Virginia .....	22	90.9	19	84.2
Washington .....	19	68.4	20	60.0
West Virginia .....	20	100.0	19	100.0
Wisconsin .....	38	65.8	33	75.8
Other States .....	84	83.3	79	84.8
United States .....	432	79.9	420	72.6

**Trout Survey Weighted Item Response Rate:** To assist in evaluating the performance of the estimates in the trout report, the weighted item response rate is displayed nationally by size category for sales and distribution quantity and value.

**Quality Measures for Trout Sales by Category – United States: 2019-2020**

States	Weighted item response rate			
	Fish sold		Value of sales	
	2019	2020	2019	2020
	(percent)	(percent)	(percent)	(percent)
Fish 12" or Longer .....	84.7	83.1	74.4	83.2
Fish 6" - 12" .....	92.9	86.7	85.3	72.5
Fish 1" - 6" .....	93.0	95.2	88.2	87.9

**Quality Measures for Trout Distribution by Category – United States: 2019-2020**

States	Weighted item response rate			
	Fish distributed		Value of distributed fish	
	2019	2020	2019	2020
	(percent)	(percent)	(percent)	(percent)
Fish 12" or Longer .....	87.7	67.0	88.7	73.0
Fish 6" - 12" .....	82.7	87.6	83.7	85.4
Fish 1" - 6" .....	90.5	90.5	76.7	86.1

**Information Contacts**

Process	Unit	Telephone	Email
Estimation .....	Livestock Branch	(202) 720-3570	HQ_SD_LB@usda.gov
Data Collection .....	Survey Administration Branch	(202) 720-3895	HQ_CSD_SAB@usda.gov
Questionnaires .....	Data Collection Branch	(202) 720-6201	HQ_CSD_DCB@usda.gov
Sampling and Editing .....	Sampling Editing and Imputation Methodology Branch	(202) 690-8141	HQ_CSD_SB@usda.gov
Summary and Estimators .....	Summary Estimation and Disclosure Methodology Branch	(202) 690-8141	HQ_SD_SMB@usda.gov
Dissemination .....	Data Dissemination Office	(202) 720-3869	HQSDOD@usda.gov
Media Contact and Webmaster ....	Public Affairs Office	(202) 720-2639	HQOAPAO@usda.gov

## Access to NASS Reports

For your convenience, you may access NASS reports and products the following ways:

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- Both national and state specific reports are available via a free e-mail subscription. To set-up this free subscription, visit [www.nass.usda.gov](http://www.nass.usda.gov) and click on “National” or “State” in upper right corner above “search” box to create an account and select the reports you would like to receive.
- Cornell’s Mann Library has launched a new website housing NASS’s and other agency’s archived reports. The new website, <https://usda.library.cornell.edu>. All email subscriptions containing reports will be sent from the new website, <https://usda.library.cornell.edu>. To continue receiving the reports via e-mail, you will have to go to the new website, create a new account and re-subscribe to the reports. If you need instructions to set up an account or subscribe, they are located at: <https://usda.library.cornell.edu/help>. You should whitelist [notifications@usda-esmis.library.cornell.edu](mailto:notifications@usda-esmis.library.cornell.edu) in your email client to avoid the emails going into spam/junk folders.

For more information on NASS surveys and reports, call the NASS Agricultural Statistics Hotline at (800) 727-9540, 7:30 a.m. to 4:00 p.m. ET, or e-mail: [nass@usda.gov](mailto:nass@usda.gov).

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